REMARKS

In view of the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow claims 1-6, 8 and 10-23, the only claims pending and currently under examination in this application.

Formal Matters

Claim 1 has been amended to further specify the "Phos" and "Tri" groups, support being found on at least page 5 of the application as filed. The claims have also been amended to refer to a compound and not a reagent. Additional clarifying amendments have been made to certain of the claims where deemed desirable. As none of the above amendments introduce new matter, their entry by the Examiner is respectfully requested.

Objection to the Abstract

In the Final Office Action, the Examiner has maintained the objection to the abstract. However, the Applicants have previously amended to provide a descriptive formula of the claimed compound. It is believed that the abstract is already fully compliant and no further amendment is necessary. The Examiner is respectfully requested to withdraw this rejection.

35 U.S.C. § 112, first paragraph rejections

Claims 1-8 and 10-23 are rejected under 35 U.S.C. §112, first paragraph as allegedly lacking enablement. In making this rejection, the Examiner alleges that it would take undue experimentation to use the invention commensurate in scope with the claims. Solely in order to expedite allowance of the present application, Claim 1 has been amended to specify that the phosphorous reactive group is one that produces phosphorous containing linkage upon bonding to the solid support. In view of this amendment, it is believed that this rejection may be withdrawn.

Claim informality Objections

Claims 4 and 5 are objected to because the term thiophenyl is incomplete.

Claims 4 and 5 are amended to refer to 2-thienyl and 3-thienyl. Accordingly, this objection may be withdrawn.

35 U.S.C. § 112, second paragraph rejections

Claims 1-8 and 10-23 are rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Each rejection will be individually addressed below.

Claims 1-8 and 10-12:

Claims 1-8 and 10-12 are rejected on the grounds that the "reagents" are allegedly not described in sufficient detail.

Claim 1 as amended describes the component parts of the compounds and where and how they are attached.

The phosphorous group contains two substituents: either a halogen or secondary amino group; and either a hydroxyl or ether group. (Y=hydrocarbyl or substituted hydrocarbyl).

"Substituted" and "substituent" are both defined in the specification at page 14:

> The term "substituted" as used to describe chemical structures, groups, or moieties, refers to the structure, group, or moiety comprising one or more substituents. As used herein, in cases in which a first group is "substituted with" a second group, the second group is attached to the first group whereby a moiety of the first group (typically a hydrogen) is replaced by the second group.
>
> "Substituent" references a group that replaces another group in a chemical structure. Typical substituents include nonhydrogen atoms (e.g. halogens), functional groups (such as, but not limited to amino, sulfhydryl, carbonyl, hydroxyl, alkoxy, carboxyl, silyl, silyloxy, phosphate and the like), hydrocarbyl groups, and hydrocarbyl groups substituted with one or more heteroatoms. Exemplary substituents include alkyl, lower alkyl, aryl, aralkyl, lower alkoxy, thioalkyl, hydroxyl, thio, mercapto, amino, imino, halo, cyano, nitro, nitroso, azido, carboxy, sulfide, sulfone, sulfoxy, phosphoryl, silyl, silyloxy, boronyl, and modified lower alkyl.

The phosphorous group is bound on the phosphorous atom to the Cgp, wherein the Cgp is either a linking group or a bond.

The specification defines "linking group" at page 12:

> "Moiety" and "group" are used interchangeably herein to refer to a portion of a molecule, typically having a particular functional or structural feature, e.g. a linking group (a portion of a molecule connecting two other portions of the molecule), or an ethyl moiety (a portion of a molecule with a structure closely related to ethane). A

"Bond" is discussed in the Specification at page 13:

> "Bound" may be used herein to indicate direct or indirect attachment. In the context of chemical structures, "bound" (or "bonded") may refer to the existence of a chemical bond directly joining two moieties or indirectly joining two moieties (e.g. via a linking group). The chemical bond may be a covalent bond, an ionic bond, a coordination complex, hydrogen bonding, van der Waals interactions, or hydrophobic stacking, or may exhibit characteristics of multiple types of chemical bonds. In certain instances, "bound" includes embodiments where the attachment is direct and also embodiments where the attachment is indirect.

The Cgp links the phosphorous reactive group with the triaryl methyl linker group. This triaryl methyl linker group is described in the claims as having three substituted or unsubstituted aryl groups, wherein at least one of the aryl groups is substituted by being bound to the reactive phosphorous group via the Cgp. Please refer to the reprints above of the sections of the specification that define "substitute" and "substituents".

The triaryl methyl linker group is linked at its central carbon through the Cgp' (which may be either a linking group or a bond – see discussion on Cgp above) to either the 3'O or 5'O of the nucleoside moiety.

Thus, one of ordinary skill in the art would understand exactly what chemical structures are being claimed. The connections between each entity are described in detail as are the variables of each entity. Accordingly, this rejection may be withdrawn.

Claims 4, 5, and 6: lacking proper antecedent basis for "reactive phosphorous group"

Claims 4, 5, and 6 are rejected on the grounds that each lacks the proper antecedent basis for "reactive phosphorous group".

Claim 1, on which claims 4-6 are directly are indirectly based, introduces the "reactive phosphorous group" in line 5 of claim 1. Claims 4-6 show that the triaryl methyl linker group is linked via the Cgp to the phosphorous reactive group. Claim 1, as amended, shows that the broken line on the phosphorous molecule is attached to the Cgp, wherein the Cgp is the linker between the triaryl methyl linker group and the phosphorous reactive group. Accordingly, there is proper antecedent support for the term "reactive phosphorous group", and the rejection may be withdrawn.

Claim 22: lacking proper antecedent basis for "optionally substituted aryl"

Claim 22 is rejected on the grounds that it lacks the proper antecedent basis for the term "optionally substituted aryl group".

Claim 22 is amended to refer to unsubstituted or substituted aryl groups. This term has antecedent precedent in claim 20, the claim on which claim 22 is dependent. Accordingly, this rejection may be withdrawn.

Claims 13-23:

Claims 13-23 are rejected on the grounds that the process being claimed is allegedly not described in sufficient detail to permit the ordinary practitioner to know what chemical process step is being claimed. Claim 13 has been amended to clarify that the method includes providing a solid support and then contacting the support with the compound as now fully recited in the claim to a produce a functionalized solid support. It is respectfully submitted that an ordinary practitioner in the art would understand the chemical process. Accordingly, this rejection may be withdrawn.

Claim 1: structure of precursor compound

Claim 1 is rejected on the grounds that the structure of the precursor compounds are not completely described because the particular linkages have

allegedly not been described, and instead use only functional terminology. Claim 1 describes the component parts of the compounds and where and how they are attached. The phosphorous group contains two substituents: either a halogen or secondary amino group; and either a hydroxyl or ether group. (Y=hydrocarbyl or substituted hydrocarbyl). The Cgp links the phosphorous reactive group with the triaryl methyl linker group. This triaryl methyl linker group is described in the claims as having three substituted or unsubstituted aryl groups, wherein at least one of the aryl groups is substituted by being bound to the reactive phosphorous group via the Cgp. The triaryl methyl linker group is linked at its central carbon through the Cgp' (which may be either a linking group or a bond – see discussion on Cgp above) to either the 3'O or 5'O of the nucleoside moiety.

Thus, one of ordinary skill in the art would understand exactly what chemical structures are being claimed. The connections between each entity are described in detail as are the variables of each entity. Accordingly, this rejection may be withdrawn.

Claim 13: structure of functionalized support

Claim 13 is rejected on the grounds that the "functionalized support" has allegedly not been described in sufficient detail to permit the ordinary practitioner to determine the structure.

Claim 13 as amended states a method of making a functionalized support, which includes providing a solid support and reacting with a compound as fully described. The specification further provides description of the functionalized support at page 6. Thus, the claim describes the functionalized support and component parts in sufficient detail to permit an ordinary practitioner to determine the structure of the materials referred to and thus the rejection may be withdrawn.

Claim 2 and 4: "substituted aryl"

Claims 2 and 4 are rejected on the grounds that "substituted aryl" is incomplete because the substituents thereby have allegedly not been defined.

However, as reviewed above, the Specification defines both substituted and substituent.

In making this rejection, the Examiner asserts that because the claim does not recite how the substitutions in the claim itself, it is indefinite.

In response, it is respectfully submitted that if a claim recites that a moiety is substituted, it need not also recite in the claim itself how the moiety is substituted. It is sufficient that the specification provide a definition of "substituted" such that one of skill in the art when reading the claim in view of the specification would know what is meant by the phrase.

The Examiner has cited to no case law to support his belief that the claim must list out the substitutions in order to be definite.

Furthermore, the phrase "substituted lower alkyl" which is analogous to "substituted aryl" appears in many claims of many recently issued patents, where these claims do not also list out the specific substituents of the substituted lower alkyl. See e.g.,:

U.S. Patent No. 7,244,705

Claim 1

1. A compound of formula II: ##STR00011## wherein: R.sup.17 is a dicarboxy-***substituted alkyl*** group having from 3 to 10 carbon atoms; R.sup.18 is selected from the group consisting of hydrogen and alkyl group; R.sup.20 is selected from --CH.sub.2CH.sub.2CH.sub.2--NH--(CH.sub.2).sub.8CH.sub.3; --CH.sub.2CH.sub.2CH.sub.2CH.sub.2--NH--(CH.sub.2).sub.7CH.sub.3; --CH.sub.2CH.sub.2--NHSO.sub.2--(CH.sub.2).sub.9CH.sub.3; --CH.sub.2CH.sub.2--NHSO.sub.2--(CH.sub.2).sub.11CH.sub.3; --CH.sub.2CH.sub.2--S--(CH.sub.2).sub.8CH.sub.3; --CH.sub.2CH.sub.2--S--(CH.sub.2).sub.9CH.sub.3; --CH.sub.2CH.sub.2--S--(CH.sub.2).sub.10CH.sub.3; --CH.sub.2CH.sub.2CH.sub.2--S--(CH.sub.2).sub.8CH.sub.3; --CH.sub.2CH.sub.2CH.sub.2--S--(CH.sub.2).sub.9CH.sub.3; --CH.sub.2CH.sub.2CH.sub.2--S--(CH.sub.2).sub.3CH.dbd.CH--(CH.sub.2).sub.- 4CH.sub.3 (trans); --CH.sub.2CH.sub.2CH.sub.2CH.sub.2--S--(CH.sub.2).sub.7CH.sub.3; --CH.sub.2CH.sub.2--S(O)--(CH.sub.2).sub.9CH.sub.3; --CH.sub.2CH.sub.2--S--(CH.sub.2).sub.6Ph; --CH.sub.2CH.sub.2--S--(CH.sub.2).sub.8Ph; --CH.sub.2CH.sub.2CH.sub.2--S--(CH.sub.2).sub.8Ph; --CH.sub.2CH.sub.2--NH--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2--NH--CH.sub.2-4-[4-(CH.sub.3).sub.2CHCH.sub.2--]-Ph;

--CH.sub.2CH.sub.2--NH--CH.sub.2-4-(4-CF.sub.3-Ph)-Ph; --CH.sub.2CH.sub.2--S--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2--S(O)--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2CH.sub.2--S--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2CH.sub.2--S(O)--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2CH.sub.2--S--CH.sub.2-4-[3,4-di-Cl-PhCH.sub.2O--)-Ph; --CH.sub.2CH.sub.2--NHSO.sub.2--CH.sub.2-4-[4-(4-Ph)-Ph]-Ph; --CH.sub.2CH.sub.2CH.sub.2--NHSO.sub.2--CH.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2CH.sub.2--NHSO.sub.2--CH.sub.2-4-(Ph-C.ident.C--)-Ph; --CH.sub.2CH.sub.2CH.sub.2--NHSO.sub.2-4-(4-Cl-Ph)-Ph; --CH.sub.2CH.sub.2CH.sub.2NHSO.sub.2-4-(naphth-2-yl)-Ph; 4-(4-chlorophenyl)benzyl; and 4-(4-chlorobenzyloxy)benzyl; or a pharmaceutically acceptable salt, or stereoisomer thereof.

U.S. Patent No. 7,241,755

1. A compound of the formula ##STR00052## wherein: ##STR00053## G is selected from the group consisting of alkyl; ***substituted alkyl***; substituted aryl; a 4 to 7 membered monocyclic, 7 to 11 membered bicyclic, or 10 to 15 membered tricyclic saturated or unsaturated ring system having between 1 and 3 heteroatoms selected from nitrogen, oxygen, and sulfur; ##STR00054## W is O or NR.sub.15; X is O or H, H; Y is selected from the group consisting of O; H, OR.sub.16; OR.sub.17, OR.sub.17; NOR.sub.18; H, NHOR.sub.19; H, NR.sub.20R.sub.21; H, H; and CHR.sub.22; wherein OR.sub.17, OR.sub.17 can be a cyclic ketal; Z.sub.1 and Z.sub.2 are independently CH.sub.2; B.sub.1 and B.sub.2 are independently selected from the group consisting of OR.sub.24, OCOR.sub.25, and O--C(.dbd.O)--NR.sub.26R.sub.27, and when B.sub.1 is OH and Y is OH, H they can form a six-membered ring ketal or acetal; R.sub.1, R.sub.2, R.sub.3, R.sub.4, R.sub.5, R.sub.7, R.sub.13, R.sub.14, R.sub.18, R.sub.19, R.sub.20, R.sub.21, R.sub.22, R.sub.26, and selected from the group consisting of H, alkyl, ***substituted alkyl,*** and aryl, and when R.sub.1 and R.sub.2 are alky, they can be joined to form a cycloalkyl; and when R.sub.3 and R.sub.4 are alkyl they can be joined to form a cycloalkyl; R.sub.6 is methyl; R.sub.16, R.sub.17, R.sub.24, and R.sub.25 are selected from the group consisting of H, alkyl, and ***substituted alkyl***; R.sub.11, R.sub.12, R.sub.32, and R.sub.33 are selected from the group consisting of H; alkyl; ***substituted alkyl***; aryl; substituted aryl; cycloalkyl containing 1 to 3 rings and 3 to 7 carbons per ring which may be further fused with an unsaturated C.sub.3 C.sub.7 carbocyclic ring; and a 4 to 7 membered monocyclic, 7 to 11 membered bicyclic, or 10 to 15 membered tricyclic saturated or unsaturated ring system having between 1 and 3 heteroatoms selected from nitrogen, oxygen, and sulfur; R.sub.8 is hydrogen or methyl; R.sub.15 is selected from the group consisting of H; alkyl; ***substituted alkyl***; aryl; substituted aryl; cycloalkyl containing 1 to 3 rings and 3 to 7 carbons per ring which may be further fused with an unsaturated C.sub.3 C.sub.7 carbocyclic ring; a 4 to 7 membered monocyclic, 7 to 11 membered bicyclic, or 10 to 15 membered tricyclic saturated or unsaturated ring system having between 1 and 3 heteroatoms selected from nitrogen, oxygen, and sulfur; R.sub.32C.dbd.O, R.sub.33SO2, hydroxy, O-alkyl or O-***substituted alkyl***; or a pharmaceutically acceptable salt thereof; with the proviso that compounds wherein W and X are both O; and R.sub.1, R.sub.2 and R.sub.7 are H; and R.sub.3 and R.sub.4 are methyl; and G is 1-methyl-2-(substituted)-4-thiazolyl-ethenyl; are excluded.

U.S .Patent No. 7,241,715

3. The composition of claim 2, wherein the ligand is characterized by the formula: ##STR00115## wherein each of R.sup.2, R.sup.3, R.sup.4, R.sup.5, R.sup.6, R.sup.7, R.sup.8 and R.sup.9 is independently selected from the group consisting of hydride, halide, and optionally ***substituted alkyl,*** alkenyl, alkynyl, heteroalkyl, heteroalkenyl, heteroalkynyl, aryl,

heteroaryl, alkoxyl, aryloxyl, silyl, boryl, phosphino, amino, alkylthio, arylthio, thioxy, seleno, nitro, and combinations thereof.

U.S. Patent No. 7,238,709

1. A compound of the formula: ##STR00587## wherein: A is phenyl; B" is --O--; R.sup.X is alkyl, alkenyl, or alkynyl, each optionally substituted with 1 to 5 alkoxy or fluoro substituents; R.sup.1 is hydrogen or alkyl; R.sup.2 is phenyl; K is a bond; K" is a bond; and B is a piperidine ring; R.sup.46 is alkyl, ***substituted alkyl,*** cycloalkyl, substituted cycloalkyl, or heterocycle; R.sup.47 is alkyl, ***substituted alkyl,*** aryl, acyl, heterocycle, or --COOR.sup.50 where R.sup.50 is alkyl; or R.sup.46 and R.sup.47 together with the nitrogen atom to which they are attached form a heterocycle, which heterocycle is optionally substituted with one or more alkyl, ***substituted alkyl,*** alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, alkoxy, substituted alkoxy, cycloalkyl, substituted cycloalkyl, cycloalkenyl, substituted cycloalkenyl, acyl, acylamino, acyloxy, amino, substituted amino, aminoacyl, aminoacyloxy, oxyaminoacyl, azido, cyano, halo, hydroxyl, keto, thioketo, carboxyl, carboxyalkyl, thioaryloxy, thioheteroaryloxy, thioheterocyclooxy, thiol, thioalkoxy, substituted thioalkoxy, aryl, aryloxy, heteroaryl, heteroaryloxy, heterocycle, heterocyclooxy, hydroxyamino, alkoxyamino, nitro, --SO-alkyl, --SO-***substituted alkyl,*** --SO-aryl, --SO-heteroaryl, --SO.sub.2-alkyl, -SO.sub.2-***substituted alkyl,*** --SO.sub.2-aryl or --SO.sub.2-heteroaryl; X is alkylene optionally substituted with one, two, or three hydroxy groups, alkylene wherein one, two, or three carbon atoms have been replaced by an oxygen atom, or an -alkylene-phenylene-alkylene- wherein the phenylene ring is optionally substituted with one or two chloro or fluoro groups; or a pharmaceutically acceptable salt thereof.

In the present case, the specification does provide a definition of "substituted" and therefore the claims are not indefinite. Accordingly, this rejection may be withdrawn.

Applicants note that the Examiner rejects claims 3, 10-12, 14-16 and 21 for the same or similar errors. Applicants respectfully submit that these claims are also definite for reasons analogous to those provided above.

Claim 7: assertedly non-operative embodiments

Solely in order to expedite allowance of the present application and without in any way agreeing with the position of the Office, Claim 7 has been cancelled, making this rejection moot.

Claim 18 and 19: directed to irrelevant subject matter/or lacking proper antecedent basis

Claims 18 and 19 are rejected on the grounds that they do not have proper

antecedent basis in claims 1 and 13, and are thus directed to irrelevant subject matter.

Claim 18 as amended is directed to the method of claim 17, said method further comprising contacting the functionalized support with a combined deprotection/ oxidation agent. This claim recites a further step of the claimed method and therefore is related to the method of independent claim 13. Claim 19 is dependent on claim 18, and incorporates all the limitations therein. Accordingly, this rejection may be withdrawn.

Claim 20: "the bond via which the reactive nucleoside group is attached to the nucleoside moiety" lacks antecedent basis

Claim 20 is rejected on the grounds that it lacks proper antecedent basis in claim 13 or 1. In view of the clarifying amendments to Claim 13, it is believed that this rejection may be withdrawn.

Agilent Ref: 10031260-1
United States Application Serial No. 10/652,063

CONCLUSION

The Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone Bret Field at (650) 327-3400.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078.

Respectfully submitted,

Date: August 2, 2007

By: _____
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